

# Effect of Different Levels of Beheaded Heights and Foliar Spray of Micronutrients on Flowering and Fruiting Attributes of Mango cv. Amrapali under High Density Planting

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

Mango plants grown under high-density planting show a progressive decline in yield after 10-11 years of planting due to overcrowding of branches. To overcome this problem rejuvenation of the orchard is generally recommended with modification of nutrients through the soil and foliar spray to increase the fruit yield. But which beheaded height is suitable for rejuvenation of plants under the high density of mango is not standardized. So this experiment was conducted to find out the effect of different levels of beheaded heights and, foliar spray of micronutrients on flowering and fruiting attributes of mango cv. Amrapali during 2019-20 and 2020-21 at the Department of Horticulture and Postharvest Technology, Institute of Agriculture, Visva-Bharati, Sriniketan, West Bengal, India. Six different beheaded height viz. T1- 80cm, T2-100 cm, T3-120 cm, T4-140 cm, T5-160 cm, and T6-180 cm and, two foliar sprays of micronutrients (just before flowering and fruiting) were taken as treatment. The experiment was designed in split-plot with three replication. Days to flowering, days to 50 % flowering, days to fruit set, number of panicles per plant, length of panicles, fruit length, fruit width, fruit weight, fruit volume, pulp weight, stone weight, peel weight and pulp stone ratios were taken for observation. It was found that different levels of beheaded height and foliar spray of micronutrients had a significant effect on flowering and fruiting attributes. Plant beheaded at 80 cm

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height from ground level showed early days to flowering, days to 50 % flowering, days to fruit set, including the highest number of panicles per plant, the largest panicles length, maximum fruit length, fruit width, fruit weight, fruit volume, pulp weight, and pulp stone ratio. Foliar spray of 0.4% Zinc Sulphate, Copper Sulphate (0.2%), Borax (0.2%) [2 sprays at just before flowering and marble stage] was found to have a significant effect on flowering and fruiting attributes except for pulp stone ratio. Interaction of different levels of beheaded height and foliar spray of micronutrients showed a significant effect on flowering and fruiting attributes. Early days to flowering, 50 % flowering, fruit set, number of panicles per plant, panicles length, fruit length, fruit width, fruit weight, fruit volume, pulp weight, and pulp stone ratio was recorded highest in T1 F2 (plant beheaded at 80 cm height with foliar spray of 0.4% Zinc Sulphate, Copper Sulphate (0.2%), Borax (0.2%). It can be concluded that a plant beheaded at 80 cm height with foliar spray of 0.4% Zinc Sulphate + Copper Sulphate (0.2%) + Borax (0.2%) [2 sprays just before flowering and marble stage] can produce higher fruit yield in terms of maximum fruit weight, fruit size, fruit volume with early flowering and fruiting.

*Keywords: Beheaded height; flowering; fruiting; high density; mango.*

## 1. INTRODUCTION

Mango is one of the most famous fruit crops in the world and belongs to the family Anacardiaceae, which originated in the Indo-Burma region [1]. Mango plants are grown for their delicious taste and quality [2]. It is a rich source of carbohydrates, sugars, fibers, protein, vitamins, and minerals [3,4]. In India, the high-density planting system gets momentum after the development of mango cv. Amrapali (a hybrid of Dashehri and Neelum) [5]. However, the mango plants grown under high density planting systems show a progressive decline in yield after 10-11 years of planting owing to overlapping/intermingling of branches, poor light interception, low photosynthetic rate, and high relative humidity within the tree canopy [6-8]. For improvement of fruit quality and yield potential of old and unproductive fruit orchards rejuvenation pruning is highly recommended if trees are in healthy conditions. But in mango rejuvenation alone could not overcome the problems unless the addition or modification of micronutrients is not done. Deficiency of micronutrients like Zinc, boron, copper etc. is common resulting in yield and quality loss [9]. Hence, management of micronutrients is critical for increasing the yield. There are few researches which showed rejuvenation and foliar spray of micronutrients increased the fruit yield in term of fruit size and fruit weight. The maximum fruit size and fruit weight was reported higher in rejuvenated plant than control in olive tree [10]. The maximum fruit size, fruit weight and pulp weight was found in plant beheaded at primary branches in citrus plant [11]. Fruit size and weight were found to increase with pruning intensities in guava [12]. Foliar application of micronutrients increases the earlier bud formation by the synthesis of

essential hormones and metabolite translocation to the bud of the tree of sweet cherry [13]. The application of boron enhanced the emergence of flowers and fruits in olive tree [14]. Foliar application of 0.4% borax and 1% ZnSO<sub>4</sub> in the litchi plant increased the fruit size and fruit weight [15]. Foliar application of ZnSO<sub>4</sub> (0.4%) increased the maximum pulp weight in pomegranate [16]. Maximum fruit weight was found with foliar spray of ZnSO<sub>4</sub>, FeSO<sub>4</sub>, and Borax in pomegranate [17]. Foliar application of Zinc sulphate (0.4%) and Boric acid (0.4%) gave a significant effect on the yield attributes of pomegranate [18]. Foliar application of borax (0.50 %) and ZnSO<sub>4</sub> (0.25 %) resulted in maximum fruit weight in papaya [19]. A similar result was found with foliar spray of zinc sulphate (0.5 %) and boric acid (0.1 %) in papaya giving the highest fruit weight, fruit length, and fruit circumference [20]. In guava, foliar application of borax (0.4%) increased the fruit length, fruit width, and fruit weight [21]. Foliar application of borax 1.0 % was also found beneficial in yield attributing characters of guava [22]. Similarly, foliar application of CuSO<sub>4</sub> (1%), FeSO<sub>4</sub> (1%), ZnSO<sub>4</sub> (1%), and borax (0.5%) resulted in maximum fruit weight and pulp weight in guava [23]. Foliar application of 0.75% zinc sulphate in guava resulted in maximum fruit weight, fruit length, fruit width, and high pulp and pulp seed ratio [24]. Foliar spray of 0.5% borax resulted in higher fruit weight and fruit volume in mango [25]. Considering the importance of rejuvenation pruning and foliar spray of micronutrients, this experiment was done to find out the effect of different levels of beheaded height and foliar spray of micronutrients on flowering and fruiting attributes of rejuvenated mango orchard cv. Amrapali planted under high-density planting.

## 2. MATERIALS AND METHODS

The experiment was conducted on thirty years old, high-density planted (3mx3m) mango orchard cv. Amrapali during 2019-20 and 2020-21 at the Department of Horticulture and Postharvest Technology, Institute of Agriculture, Visva-Bharati, Sriniketan, West Bengal. Six different beheaded heights: T<sub>1</sub>- 80cm, T<sub>2</sub>-100 cm, T<sub>3</sub>-120 cm, T<sub>4</sub>-140 cm, T<sub>5</sub>-160 cm, and T<sub>6</sub>-180, with two foliar applications viz. F<sub>1</sub>: Foliar spray of 0.2% Zinc sulphate + 0.1% Copper sulphate + 0.1% Boric acid (2 sprays at just before flowering and marble stage), F<sub>2</sub>: Foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) [2 spray at just before flowering and marble stage] were taken as treatments. The experiment was laid out in split plot design with three replication. The following observations were recorded: Days to flowering: It was counted from the first panicle initiation days to the first flowering days. For this ten shoots from each direction were tagged before flowering. Days to 50% flowering: It was counted from the first panicle initiation days to 50 % flowering of the tagged shoot. Days to fruit set: It was counted from the first panicle initiation days to the first fruit set of the tagged shoot. Number of panicles per plant: All the panicles of individual plants were counted during flowering period. Length of panicles at anthesis: The length of the panicle was measured by measuring a scale from the shoot apex to that of the panicle apex. An average of five values was taken for computing the mean panicle length. Average fruit weight (g): Weight of ten fruits from each plant, was recorded by weighing the samples on balance and expressed in grams. Fruit length: The length of ten fruits was measured from apex to stem end by vernier calipers and expressed in centimeters. Fruit width: The width of ten fruits was recorded with the help of a vernier caliper and expressed in terms of centimeters. Volume of fruit (cc): The data on the fruit volume was recorded by the water displacement method [26]. Each mango fruit was submerged in 500 cm<sup>3</sup> water in eureka container and the volume of displaced water was directly measured using graduated cylinder. Water temperature was maintained at 25°C [27]. Stone weight (g), Peel weight (g) and pulp weight (g), and pulp stone ratio: This was calculated by weighing the ripened fruits separately, followed by pulp and stone after peeling of fruits, and the ratio was

calculated by dividing pulp weight by stone weight. The data was analyzed by R software.

## 3. RESULTS

### 3.1 Days to Flowering

A perusal analysis of pooled data presented in Table 1 showed that beheaded height and micronutrients had shown significant on days to flowering. Early days to flowering were found in T<sub>1</sub> (23.50 days, 23.33 days, and 23.42 days) during 2020, 2021, and pooled respectively which was found statistically superior to T<sub>4</sub> (25 days), followed by T<sub>2</sub> (25.08 days), T<sub>3</sub> (26.58 days) and T<sub>5</sub> (29.29 days) in pooled analysis of both years. The late flowering was observed in T<sub>6</sub> (29.58 days). Foliar spray of micronutrients showed significant effect on days to flowering. Foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) recorded early flowering (26.04 days). Interaction of different levels of beheaded height and foliar spray of micronutrients also showed a significant effect on days to flowering. Early days to flowering were recorded in T<sub>1</sub> F<sub>2</sub> (21.67 days) which was found statistically superior to T<sub>2</sub> F<sub>2</sub> (24.50 days) followed by T<sub>4</sub> F<sub>1</sub> (24.83 days), T<sub>4</sub> F<sub>2</sub> (25.17 days), T<sub>1</sub> F<sub>1</sub> (25.17 days), T<sub>2</sub> F<sub>1</sub> (25.67 days), T<sub>3</sub> F<sub>1</sub> (26.50 days), T<sub>3</sub> F<sub>2</sub> (26.67 days), T<sub>6</sub> F<sub>2</sub> (29.00 days), T<sub>5</sub> F<sub>2</sub> (29.25 days), T<sub>5</sub> F<sub>1</sub> (29.33 days). The late flowering was observed in T<sub>6</sub> F<sub>1</sub> (30.17 days).

### 3.2 Days to 50% Flowering

The pooled data presented in Table 2 showed that beheaded height had shown a significant effect on days to 50 flowerings. Early days to 50 % flowering were recorded in T<sub>1</sub> (30.90 days) which was found statistically superior to T<sub>2</sub> (33.67days) and similar parity with T<sub>4</sub> (33.75 days), T<sub>3</sub> (34.08 days) and, T<sub>5</sub> (35.08 days). The late days to 50 % flowering were observed in T<sub>6</sub> (36.92 days). Foliar spray, F<sub>2</sub> exerted a significant effect on days to 50 % flowering while the interaction of beheaded height and foliar spray of micronutrients showed a significant effect on days to flowering. Early days to 50 % flowering were recorded in T<sub>1</sub> F<sub>2</sub> (30.67 days) which was found statistically superior to T<sub>2</sub> F<sub>2</sub> (32.17 days), followed by T<sub>4</sub> F<sub>1</sub> (34.50 days), T<sub>5</sub> F<sub>2</sub> (35.00 days), and T<sub>5</sub> F<sub>1</sub> (35.17 days). The late flowering was observed in T<sub>6</sub> F<sub>1</sub> (37.00 days).

Table 1. Effect of different level of beheaded heights and foliar spray of micronutrients on days to flowering

Treatments	Days to flowering								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	25.00 <sup>c</sup>	22.00 <sup>d</sup>	<b>23.50<sup>d</sup></b>	25.33 <sup>cd</sup>	21.33 <sup>e</sup>	<b>23.33<sup>d</sup></b>	25.17 <sup>bc</sup>	21.67 <sup>d</sup>	<b>23.42<sup>d</sup></b>
T2	25.00 <sup>c</sup>	25.00 <sup>c</sup>	<b>25.00<sup>bc</sup></b>	26.33 <sup>cd</sup>	24.00 <sup>d</sup>	<b>25.17<sup>c</sup></b>	25.67 <sup>bc</sup>	24.50 <sup>c</sup>	<b>25.08<sup>b</sup></b>
T3	25.67 <sup>bc</sup>	27.00 <sup>b</sup>	<b>26.33<sup>b</sup></b>	27.33 <sup>bc</sup>	26.33 <sup>cd</sup>	<b>26.83<sup>b</sup></b>	26.50 <sup>b</sup>	26.67 <sup>b</sup>	<b>26.58<sup>c</sup></b>
T4	25.00 <sup>c</sup>	24.67 <sup>c</sup>	<b>24.83<sup>cd</sup></b>	24.67 <sup>d</sup>	25.67 <sup>cd</sup>	<b>25.17<sup>c</sup></b>	24.83 <sup>c</sup>	25.17 <sup>bc</sup>	<b>25.00<sup>c</sup></b>
T5	29.67 <sup>a</sup>	29.17 <sup>a</sup>	<b>29.42<sup>a</sup></b>	29.00 <sup>ab</sup>	29.33 <sup>ab</sup>	<b>29.17<sup>a</sup></b>	29.33 <sup>a</sup>	29.25 <sup>a</sup>	<b>29.29<sup>a</sup></b>
T6	30.33 <sup>a</sup>	29.00 <sup>a</sup>	<b>29.67<sup>a</sup></b>	30.00 <sup>a</sup>	29.00 <sup>ab</sup>	<b>29.50<sup>a</sup></b>	30.17 <sup>a</sup>	29.00 <sup>a</sup>	<b>29.58<sup>a</sup></b>
Mean	<b>26.78<sup>a</sup></b>	<b>26.14<sup>b</sup></b>	<b>26.46</b>	<b>27.11<sup>a</sup></b>	<b>25.94<sup>b</sup></b>	<b>26.53</b>	<b>26.94<sup>a</sup></b>	<b>26.04<sup>b</sup></b>	<b>26.49</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		0.70	0.62*		1.72	0.95*		0.87	0.68*
T		1.30	1.47***		1.19	1.41***		1.11	1.35***
F*T		0.70	1.52*		1.72	2.33		0.87	1.66*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

Table 2. Effect of different level of beheaded heights and foliar spray of micronutrients on days to 50 % flowering

Treatments	Days to 50% flowering								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	31.33 <sup>d</sup>	31.33 <sup>d</sup>	31.33 <sup>b</sup>	30.93 <sup>ig</sup>	30.00 <sup>g</sup>	30.47 <sup>d</sup>	31.13 <sup>e</sup>	30.67 <sup>e</sup>	30.90 <sup>c</sup>
T2	33.00 <sup>cd</sup>	33.33 <sup>cd</sup>	33.17 <sup>b</sup>	37.33 <sup>bc</sup>	31.00 <sup>fg</sup>	34.17 <sup>bc</sup>	35.17 <sup>abc</sup>	32.17 <sup>de</sup>	33.67 <sup>b</sup>
T3	33.00 <sup>cd</sup>	32.00 <sup>cd</sup>	32.50 <sup>b</sup>	40.67 <sup>bc</sup>	30.67 <sup>fg</sup>	35.67 <sup>bc</sup>	36.83 <sup>ab</sup>	31.33 <sup>e</sup>	34.08 <sup>b</sup>
T4	32.67 <sup>cd</sup>	32.67 <sup>cd</sup>	32.67 <sup>b</sup>	36.33 <sup>cd</sup>	33.33 <sup>ef</sup>	34.83 <sup>ab</sup>	34.50 <sup>bcd</sup>	33.00 <sup>cd</sup>	33.75 <sup>b</sup>
T5	36.00 <sup>b</sup>	38.50 <sup>a</sup>	37.25 <sup>a</sup>	34.33 <sup>de</sup>	31.50 <sup>efg</sup>	32.92 <sup>abc</sup>	35.17 <sup>abc</sup>	35.00 <sup>abc</sup>	35.08 <sup>b</sup>
T6	34.00 <sup>bc</sup>	39.33 <sup>a</sup>	36.67 <sup>a</sup>	40.00 <sup>ab</sup>	34.33 <sup>dc</sup>	37.17 <sup>cd</sup>	37.00 <sup>a</sup>	36.83 <sup>ab</sup>	36.92 <sup>a</sup>
Mean	<b>33.33<sup>b</sup></b>	<b>34.53<sup>a</sup></b>	<b>33.93</b>	<b>36.60<sup>a</sup></b>	<b>31.81<sup>b</sup></b>	<b>34.20</b>	<b>34.97<sup>a</sup></b>	<b>33.17<sup>b</sup></b>	<b>34.07</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		1.66	0.93*		2.77	1.21***		1.75	0.96**
T		3.82	2.51**		4.55	2.74**		1.52	1.59***
F*T		1.66	2.29*		2.77	2.96**		1.75	2.35*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

Table 3.. Effect of different level of beheaded heights and foliar spray of micronutrients on days to fruit set

Treatments	Days to fruit set								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	38.33 <sup>f</sup>	38.00 <sup>f</sup>	38.17 <sup>b</sup>	37.00 <sup>def</sup>	34.87 <sup>f</sup>	35.93 <sup>c</sup>	37.67 <sup>cd</sup>	36.43 <sup>d</sup>	37.05 <sup>b</sup>
T2	40.00 <sup>de</sup>	39.00 <sup>ef</sup>	39.50 <sup>b</sup>	38.33 <sup>cd</sup>	35.33 <sup>def</sup>	36.83 <sup>c</sup>	39.17 <sup>bc</sup>	37.17 <sup>d</sup>	38.17 <sup>b</sup>
T3	40.67 <sup>cd</sup>	38.00 <sup>f</sup>	39.33 <sup>b</sup>	38.00 <sup>cde</sup>	36.33 <sup>def</sup>	37.17 <sup>bc</sup>	39.33 <sup>b</sup>	37.17 <sup>d</sup>	38.25 <sup>b</sup>
T4	39.67 <sup>dc</sup>	36.00 <sup>g</sup>	37.83 <sup>b</sup>	40.00 <sup>bc</sup>	37.00 <sup>def</sup>	38.50 <sup>b</sup>	39.83 <sup>b</sup>	36.50 <sup>d</sup>	38.17 <sup>b</sup>
T5	43.67 <sup>a</sup>	41.33 <sup>c</sup>	42.50 <sup>a</sup>	41.67 <sup>ab</sup>	44.15 <sup>a</sup>	42.91 <sup>a</sup>	42.67 <sup>a</sup>	42.74 <sup>a</sup>	42.70 <sup>a</sup>
T6	41.67 <sup>bc</sup>	42.67 <sup>ab</sup>	42.17 <sup>a</sup>	43.00 <sup>a</sup>	42.23 <sup>ab</sup>	42.62 <sup>a</sup>	42.33 <sup>a</sup>	42.45 <sup>a</sup>	42.39 <sup>a</sup>
Mean	40.67 <sup>a</sup>	39.17 <sup>b</sup>	39.92	39.67 <sup>a</sup>	38.32 <sup>b</sup>	38.99	40.17 <sup>a</sup>	38.74 <sup>b</sup>	39.45
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		0.53	0.53***		2.50	1.15*		0.85	0.67***
T		2.78	2.15**		1.29	1.46**		1.19	1.40***
F*T		0.53	1.29**		2.50	2.81		0.85	1.64*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

Table 4. Effect of different level of beheaded heights and foliar spray of micronutrients on number of panicles per plant

Treatments	Number of panicles per plant								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	67.00 <sup>bc</sup>	76.00 <sup>a</sup>	71.50 <sup>a</sup>	64.33 <sup>c</sup>	79.00 <sup>a</sup>	71.67 <sup>a</sup>	65.67 <sup>b</sup>	77.50 <sup>a</sup>	71.58 <sup>a</sup>
T2	57.67 <sup>de</sup>	69.00 <sup>ab</sup>	63.33 <sup>b</sup>	56.67 <sup>de</sup>	69.00 <sup>b</sup>	62.83 <sup>b</sup>	57.17 <sup>cd</sup>	69.00 <sup>b</sup>	63.08 <sup>c</sup>
T3	56.00 <sup>def</sup>	60.33 <sup>cd</sup>	58.17 <sup>c</sup>	57.67 <sup>d</sup>	57.67 <sup>d</sup>	57.67 <sup>c</sup>	56.83 <sup>cd</sup>	59.00 <sup>c</sup>	57.92 <sup>c</sup>
T4	54.00 <sup>def</sup>	55.33 <sup>def</sup>	54.67 <sup>c</sup>	53.00 <sup>ef</sup>	53.33 <sup>ef</sup>	53.17 <sup>cd</sup>	53.50 <sup>de</sup>	54.33 <sup>cde</sup>	53.92 <sup>cd</sup>
T5	48.67 <sup>fgh</sup>	52.00 <sup>efg</sup>	50.33 <sup>d</sup>	52.33 <sup>f</sup>	52.67 <sup>f</sup>	52.50 <sup>d</sup>	50.50 <sup>ef</sup>	52.33 <sup>de</sup>	51.42 <sup>d</sup>
T6	45.67 <sup>gh</sup>	42.00 <sup>h</sup>	43.83 <sup>e</sup>	47.67 <sup>g</sup>	46.33 <sup>g</sup>	47.00 <sup>e</sup>	46.67 <sup>fg</sup>	44.17 <sup>g</sup>	45.42 <sup>e</sup>
Mean	54.83 <sup>b</sup>	59.11 <sup>a</sup>	56.97	55.28 <sup>b</sup>	59.67 <sup>a</sup>	57.47	55.06 <sup>b</sup>	59.39 <sup>a</sup>	57.22
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		20.47	3.29*		4.39	1.52***		4.39	1.52***
T		8.99	3.86***		13.91	4.81***		13.96	4.81***
F*T		20.47	8.05		4.39	3.73***		4.39	3.73***

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

### 3.3 Days to Fruit Set

The pooled data illustrated in table-3 showed that beheaded height had shown a significant effect on days to fruit set. Early days to the fruit set were recorded in T<sub>1</sub> (37.05 days) followed by and found similar parity with T<sub>4</sub> (38.17 days,) and T<sub>2</sub> (38.17 days), followed by T<sub>3</sub> (38.25 days), and T<sub>6</sub> (42.39 days). The late fruit set was recorded in T<sub>5</sub> (42.7170 days). Foliar spray of micronutrients showed a significant effect on days to fruit set. Early days to fruit set was recorded by foliar application of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) during investigation 2020 (39.17 days), 2021 (38.32 days), and pooled (38.74 days) respectively. Interaction of beheaded height and foliar spray of micronutrients showed a significant effect on days to fruit set. Early days to the fruit set were found in T<sub>1</sub> F<sub>2</sub> (36.43 days) which was found similar to T<sub>4</sub> F<sub>2</sub> (36.50 days), T<sub>3</sub> F<sub>2</sub> (37.17 days,) and T<sub>2</sub> F<sub>2</sub> (37.17 days), followed by T<sub>1</sub> F<sub>1</sub> (37.67 days), T<sub>2</sub> F<sub>1</sub> (39.17 days), T<sub>3</sub> F<sub>1</sub> (39.33 days), T<sub>4</sub> F<sub>1</sub> (39.83 days), T<sub>6</sub> F<sub>1</sub> (42.33 days), T<sub>6</sub> F<sub>2</sub> (42.45 days,) and T<sub>5</sub> F<sub>1</sub> (42.67 days). The delayed fruit set was recorded in T<sub>5</sub> F<sub>2</sub> (42.74 days).

### 3.4 Number of Panicles per Plant

The pooled analysis of data presented in Table 4 showed that beheaded height had shown a significant effect on the number of panicles per plant. The highest number of panicles per plant was recorded in T<sub>1</sub> (71.58) which was found statistically significant and superior to T<sub>2</sub> (63.08) followed by T<sub>3</sub> (57.92), T<sub>4</sub> (53.92), and T<sub>5</sub> (51.42). The lowest number of panicles per plant was recorded in T<sub>6</sub> (45.42). The foliar spray of micronutrients showed a significant effect on the number of panicles per plant during the investigation period. Foliar spray, F<sub>2</sub> [0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) recorded highest number of panicles per plant during the investigation period 2020 (59.11), 2021 (59.67), and pooled (59.39) respectively. Interaction of beheaded height and foliar spray of micronutrients also showed a highly significant effect on the number of panicles per plant. The highest number of panicles per plant was recorded in T<sub>1</sub>F<sub>2</sub> (77.50) which was found statistically superior to T<sub>2</sub> F<sub>2</sub> (69.00), followed by T<sub>1</sub> F<sub>1</sub> (65.67), T<sub>3</sub> F<sub>2</sub> (59.00), T<sub>2</sub> F<sub>1</sub> (57.17), T<sub>3</sub> F<sub>1</sub> (56.83), T<sub>4</sub> F<sub>2</sub> (54.33), T<sub>4</sub> F<sub>1</sub> (53.50), T<sub>5</sub> F<sub>2</sub> (52.33) T<sub>5</sub>F<sub>1</sub> (50.50), T<sub>6</sub>F<sub>1</sub> (46.67). The lowest number of panicles per plant was recorded in T<sub>6</sub>F<sub>2</sub> (44.17).

### 3.5 Length of Panicles (cm)

A perusal analysis of pooled data presented in Table 5 reveals that beheaded height had shown a significant effect on the length of panicles. The largest panicle length was recorded in T<sub>1</sub> (30.52 cm) which was found statistically significant to T<sub>2</sub> (28.52 cm) followed by T<sub>5</sub> (26.18 cm), T<sub>6</sub> (25.78 cm), and T<sub>3</sub> (25.53 cm). The lowest panicle length was recorded in T<sub>4</sub> (25.03 cm). The foliar spray of micronutrients had a highly significant effect on panicle length during the investigation. The maximum panicles length was recorded by foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) during the investigation period 2020 (27.12 cm), 2021 (27.99 cm), and pooled (27.56 cm) respectively. Interaction of beheaded height and foliar spray of micronutrients also showed a highly significant effect on the length of panicles. The largest panicles length were recorded in T<sub>1</sub> F<sub>2</sub> (30.53 cm) which was similar to T<sub>1</sub> F<sub>1</sub> (30.52 cm) but found significant difference over T<sub>2</sub> F<sub>2</sub> (28.68 cm) followed by T<sub>2</sub> F<sub>1</sub> (28.36 cm), T<sub>5</sub> F<sub>2</sub> (27.97 cm), T<sub>3</sub> F<sub>2</sub> (27.33 cm), T<sub>6</sub> F<sub>1</sub> (26.00 cm), T<sub>6</sub> F<sub>2</sub> (25.56 cm), T<sub>6</sub> F<sub>2</sub> (25.56) ,T<sub>4</sub> F<sub>2</sub> (25.28 cm) ,T<sub>4</sub> F<sub>1</sub> (24.78 cm), and T<sub>5</sub> F<sub>1</sub> (24.39 cm). The lowest panicle length was observed in T<sub>3</sub> F<sub>1</sub> (23.72 cm).

### 3.6. Fruit Length (cm)

The pooled data presented in Table 6 showed that beheaded height and micronutrients had showed a significant on the length of fruits. The maximum fruit length (13.52 cm, 12.70 cm, and 13.11 cm) was recorded in plant beheaded at 80 cm (T<sub>1</sub>) from ground level during 2020, 2021, and pooled respectively followed by T<sub>2</sub> (12.68 cm), T<sub>3</sub> (12.67cm), T<sub>4</sub> (12.15 cm), T<sub>5</sub> (12.11 cm). The minimum fruit weight was recorded in T<sub>5</sub> (12.02 cm). Foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) was found to be significant effect on fruit length during the investigation period 2020 (13.03 cm) 2021 (12.36 cm), and pooled (12.69 cm). Interaction of beheaded height and foliar spray of micronutrients showed a significant effect on fruit length. The maximum fruit length was recorded in T<sub>1</sub> F<sub>2</sub> (13.50 cm) followed by T<sub>3</sub> F<sub>2</sub> (13.26 cm) which was found statistically similar to T<sub>2</sub> F<sub>2</sub> (12.87 cm) but significantly differ to T<sub>1</sub> F<sub>1</sub> (12.71 cm) followed by T<sub>2</sub> F<sub>1</sub> (12.49 cm), T<sub>5</sub> F<sub>2</sub> (12.24 cm), T<sub>4</sub> F<sub>1</sub> (12.16 cm), T<sub>6</sub> F<sub>2</sub> (12.15 cm), T<sub>4</sub> F<sub>2</sub> (12.14 cm), T<sub>3</sub> F<sub>1</sub> (12.07 cm) and T<sub>5</sub> F<sub>1</sub> (11.98 cm). The minimum fruit length was recorded in T<sub>6</sub> F<sub>1</sub> (11.89 cm).

Table 5. Effect of different level of beheaded heights and foliar spray of micronutrients on length of panicles

Treatments	Length of panicles(cm)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	31.00 <sup>a</sup>	30.44 <sup>ab</sup>	30.72 <sup>a</sup>	30.03 <sup>ab</sup>	30.61 <sup>a</sup>	30.32 <sup>a</sup>	30.52 <sup>ab</sup>	30.53 <sup>a</sup>	30.52 <sup>a</sup>
T2	28.33 <sup>bcd</sup>	29.22 <sup>abc</sup>	28.78 <sup>ab</sup>	28.37 <sup>bc</sup>	28.13 <sup>c</sup>	28.25 <sup>b</sup>	28.35 <sup>bc</sup>	28.68 <sup>c</sup>	28.52 <sup>b</sup>
T3	22.00 <sup>g</sup>	26.33 <sup>de</sup>	24.17 <sup>c</sup>	25.44 <sup>de</sup>	28.33 <sup>bc</sup>	26.89 <sup>c</sup>	23.72 <sup>dc</sup>	27.33 <sup>bc</sup>	25.53 <sup>c</sup>
T4	22.67 <sup>fg</sup>	23.89 <sup>fg</sup>	23.28 <sup>c</sup>	26.89 <sup>cd</sup>	26.67 <sup>cd</sup>	26.78 <sup>c</sup>	24.78 <sup>cd</sup>	25.28 <sup>cde</sup>	25.03 <sup>c</sup>
T5	22.89 <sup>fg</sup>	27.83 <sup>cd</sup>	25.36 <sup>c</sup>	25.89 <sup>dc</sup>	28.10 <sup>de</sup>	26.99 <sup>c</sup>	24.39 <sup>de</sup>	27.97 <sup>c</sup>	26.18 <sup>c</sup>
T6	27.00 <sup>cde</sup>	25.00 <sup>ef</sup>	26.00 <sup>bc</sup>	25.00 <sup>e</sup>	26.12 <sup>de</sup>	25.56 <sup>d</sup>	26.00 <sup>c</sup>	25.56 <sup>de</sup>	25.78 <sup>c</sup>
Mean	25.65 <sup>b</sup>	27.12 <sup>a</sup>	26.38	26.94 <sup>b</sup>	27.99 <sup>a</sup>	27.47	26.29 <sup>b</sup>	27.56 <sup>a</sup>	26.92
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		1.83	3.09**		0.98	0.72**		0.98	0.72**
T		7.57	0.98**		0.71	1.08***		0.71	1.08***
F*T		1.83	2.41**		0.98	1.76		0.98	1.76**

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\* P &lt; 0.001

Table 6. Effect of different level of beheaded heights and foliar spray of micronutrients on fruit length

Treatments	Fruit Length (cm)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	13.13 <sup>abc</sup>	13.90 <sup>a</sup>	13.52 <sup>a</sup>	12.29 <sup>bc</sup>	13.11 <sup>a</sup>	12.70 <sup>a</sup>	12.71 <sup>c</sup>	13.50 <sup>a</sup>	13.11 <sup>a</sup>
T2	13.06 <sup>bcd</sup>	12.64 <sup>cd</sup>	12.85 <sup>bc</sup>	11.93 <sup>cd</sup>	13.10 <sup>a</sup>	12.52 <sup>a</sup>	12.49 <sup>cd</sup>	12.87 <sup>bc</sup>	12.68 <sup>a</sup>
T3	12.27 <sup>d</sup>	13.80 <sup>ab</sup>	13.04 <sup>ab</sup>	11.87 <sup>cd</sup>	12.72 <sup>ab</sup>	12.30 <sup>ab</sup>	12.07 <sup>de</sup>	13.26 <sup>ab</sup>	12.67 <sup>a</sup>
T4	12.37 <sup>cd</sup>	12.45 <sup>cd</sup>	12.41 <sup>c</sup>	11.95 <sup>cd</sup>	11.82 <sup>cd</sup>	11.88 <sup>bc</sup>	12.16 <sup>de</sup>	12.13 <sup>dc</sup>	12.15 <sup>a</sup>
T5	12.37 <sup>cd</sup>	12.85 <sup>cd</sup>	12.61 <sup>bc</sup>	11.59 <sup>d</sup>	11.63 <sup>d</sup>	11.61 <sup>c</sup>	11.98 <sup>e</sup>	12.24 <sup>de</sup>	12.11 <sup>b</sup>
T6	12.31 <sup>cd</sup>	12.53 <sup>cd</sup>	12.42 <sup>c</sup>	11.48 <sup>d</sup>	11.77 <sup>cd</sup>	11.62 <sup>c</sup>	11.89 <sup>e</sup>	12.15 <sup>de</sup>	12.02 <sup>b</sup>
Mean	12.59 <sup>b</sup>	13.03 <sup>a</sup>	12.81	11.85 <sup>b</sup>	12.36 <sup>a</sup>	12.11	12.22 <sup>b</sup>	12.69 <sup>a</sup>	12.46 <sup>b</sup>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		0.22	0.34*		0.12	0.26**		0.07	0.19***
T		0.68	0.54**		0.19	0.56**		0.12	0.45**
F*T		0.22	0.82		0.13	0.64		0.07	0.47*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\* P &lt; 0.001

Table 7. Effect of different level of beheaded heights and foliar spray of micronutrients on fruit width

Treatments	Fruit width (cm)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	9.59 <sup>abc</sup>	9.75 <sup>ab</sup>	9.67 <sup>a</sup>	9.27 <sup>a</sup>	10.09 <sup>a</sup>	9.68 <sup>a</sup>	9.43 <sup>bc</sup>	9.92 <sup>a</sup>	9.68 <sup>a</sup>
T2	9.11 <sup>d</sup>	9.83 <sup>ab</sup>	9.47 <sup>ab</sup>	9.03 <sup>b</sup>	9.44 <sup>ab</sup>	9.23 <sup>ab</sup>	9.07 <sup>cd</sup>	9.63 <sup>ab</sup>	9.35 <sup>ab</sup>
T3	9.29 <sup>cd</sup>	9.42 <sup>abcd</sup>	9.35 <sup>bc</sup>	8.98 <sup>b</sup>	9.30 <sup>ab</sup>	9.14 <sup>ab</sup>	9.13 <sup>cd</sup>	9.36 <sup>bc</sup>	9.25 <sup>b</sup>
T4	9.10 <sup>d</sup>	9.42 <sup>abcd</sup>	9.26 <sup>bc</sup>	8.61 <sup>b</sup>	9.17 <sup>bc</sup>	8.89 <sup>bc</sup>	8.85 <sup>de</sup>	9.30 <sup>bc</sup>	9.08 <sup>bc</sup>
T5	9.18 <sup>cd</sup>	9.42 <sup>abcd</sup>	9.30 <sup>bc</sup>	8.56 <sup>f</sup>	7.87 <sup>cd</sup>	8.22 <sup>cd</sup>	8.87 <sup>de</sup>	8.64 <sup>e</sup>	8.76 <sup>cd</sup>
T6	9.35 <sup>bcd</sup>	9.06 <sup>d</sup>	9.20 <sup>c</sup>	8.31 <sup>f</sup>	7.93 <sup>d</sup>	8.12 <sup>d</sup>	8.83 <sup>de</sup>	8.50 <sup>e</sup>	8.66 <sup>d</sup>
Mean	<b>9.27<sup>b</sup></b>	<b>9.48<sup>a</sup></b>	<b>9.38</b>	<b>8.79<sup>a</sup></b>	<b>8.97<sup>a</sup></b>	<b>8.88</b>	<b>9.03<sup>b</sup></b>	<b>9.23<sup>a</sup></b>	<b>9.13</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		0.06	0.18*		0.07	0.19		0.04	0.15*
T		0.04	0.26**		0.28	0.67**		0.07	0.35***
F*T		0.06	0.44		0.07	0.45**		0.04	0.38*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

Table 8. Effect of different level of beheaded heights and foliar spray of micronutrients on fruit volume

Treatments	Fruit volume (cc)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	246.47 <sup>bcd</sup>	307.67 <sup>a</sup>	277.07 <sup>a</sup>	251.17 <sup>cd</sup>	294.11 <sup>a</sup>	272.64 <sup>a</sup>	248.82 <sup>de</sup>	300.89 <sup>a</sup>	274.86 <sup>a</sup>
T2	255.00 <sup>bcd</sup>	248.00 <sup>bcd</sup>	251.50 <sup>b</sup>	248.60 <sup>cd</sup>	263.70 <sup>bc</sup>	256.15 <sup>a</sup>	251.80 <sup>cde</sup>	255.85 <sup>cd</sup>	253.83 <sup>b</sup>
T3	224.17 <sup>def</sup>	275.89 <sup>ab</sup>	250.03 <sup>b</sup>	234.78 <sup>def</sup>	276.01 <sup>b</sup>	255.40 <sup>ab</sup>	229.47 <sup>fgh</sup>	275.95 <sup>b</sup>	252.72 <sup>b</sup>
T4	241.67 <sup>cdef</sup>	260.00 <sup>bc</sup>	250.83 <sup>b</sup>	228.41 <sup>ef</sup>	277.59 <sup>ab</sup>	253.00 <sup>ab</sup>	235.04 <sup>efg</sup>	268.79 <sup>bc</sup>	251.92 <sup>b</sup>
T5	217.50 <sup>ef</sup>	243.00 <sup>bcd</sup>	230.25 <sup>c</sup>	225.67 <sup>f</sup>	244.68 <sup>de</sup>	235.18 <sup>bc</sup>	221.58 <sup>gh</sup>	243.84 <sup>def</sup>	232.71 <sup>c</sup>
T6	208.00 <sup>f</sup>	246.00 <sup>bcd</sup>	227.00 <sup>c</sup>	217.63 <sup>f</sup>	235.02 <sup>def</sup>	226.33 <sup>c</sup>	212.82 <sup>h</sup>	240.51 <sup>def</sup>	226.66 <sup>c</sup>
Mean	<b>232.13<sup>b</sup></b>	<b>263.43<sup>a</sup></b>	<b>247.78</b>	<b>234.38<sup>b</sup></b>	<b>265.19<sup>a</sup></b>	<b>249.78</b>	<b>233.26<sup>b</sup></b>	<b>264.31<sup>a</sup></b>	<b>248.78</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		367.28	13.92***		96.62	7.14***		111.54	7.67***
T		226.60	19.36**		249.52	30.32**		147.53	15.62***
F*T		367.28	34.09		96.62	17.49*		111.54	18.79*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001, cc=cubic centimeters



### 3.7 Fruit Width (cm)

The data presented in Table 7 reveals that beheaded height and micronutrients had shown a significant effect on fruit width. The maximum fruit width (9.67 cm, 9.68 cm, and 9.68 cm) was recorded in plant beheaded at 80 cm height (T<sub>1</sub>) from ground level during 2020, 2021, and pooled respectively followed by T<sub>2</sub> (9.35 cm), T<sub>3</sub> (9.25 cm), T<sub>4</sub> (9.08 cm), and T<sub>5</sub> (8.76 cm). The minimum fruit width was recorded in T<sub>6</sub> (8.66 cm). Foliar spray of micronutrients shows significant effect on fruit width. Foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) recorded highest fruit width during the investigation period 2020 (9.48 cm) 2021 (8.97 cm), and pooled 9.23 cm) respectively. Interaction of beheaded height and foliar spray of micronutrients showed a significant effect on fruit width. The maximum fruit width was recorded in T<sub>2</sub>F<sub>2</sub> (9.92 cm) followed by T<sub>2</sub>F<sub>1</sub> (9.63 cm), T<sub>1</sub>F<sub>1</sub> (9.43 cm), T<sub>3</sub>F<sub>2</sub> (9.36 cm), T<sub>4</sub>F<sub>2</sub> (9.30 cm), T<sub>3</sub>F<sub>1</sub> (9.13 cm), T<sub>2</sub>F<sub>1</sub> (9.07 cm), T<sub>5</sub>F<sub>1</sub> (8.87 cm), T<sub>4</sub>F<sub>1</sub> (8.85 cm), T<sub>6</sub>F<sub>1</sub> (8.83 cm) and T<sub>5</sub>F<sub>2</sub> (8.64 cm). The minimum fruit width was recorded in T<sub>6</sub>F<sub>2</sub> (8.50 cm).

### 3.8 Fruit Volume (cc)

A perusal analysis of data presented in Table 8 showed that beheaded height and micronutrients had showed a significant on fruit volume. The maximum fruit volume (277.07 cc, 272.64 cc, and 274.86 cc) was recorded in T<sub>1</sub> during 2020, 2021, and pooled respectively, and was found highly significant over T<sub>2</sub> (253.83 cc) followed by T<sub>3</sub> (252.72 cc), T<sub>4</sub> (251.92 cc), and T<sub>5</sub> (232.71 cc). The minimum fruit volume was recorded in T<sub>6</sub> (226.66 cc). Foliar spray of micronutrients shows significant effect on fruit volume. The highest fruit volume were observed with foliar application 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) during the investigation period 2020 (263.43 cc) 2021 (265.19 cc), and pooled 264.31 cc). Interaction of beheaded height and foliar spray of micronutrients showed a significant effect on fruit volume. The maximum fruit volume was recorded in T<sub>1</sub>F<sub>2</sub> (300.89 cc) which was statistically superior to T<sub>3</sub>F<sub>2</sub> (275.95 cc) followed by T<sub>4</sub>F<sub>2</sub> (268.79 cc), T<sub>2</sub>F<sub>2</sub> (255.85 cc), T<sub>2</sub>F<sub>1</sub> (251.80 cc), T<sub>1</sub>F<sub>1</sub> (248.82 cc), T<sub>5</sub>F<sub>2</sub> (243.84 cc), T<sub>6</sub>F<sub>2</sub> (240.51 cc), T<sub>4</sub>F<sub>1</sub> (235.04 cc), T<sub>3</sub>F<sub>1</sub> (229.48 cc), T<sub>5</sub>F<sub>1</sub> (221.58 cc). The lowest fruit volume was recorded in T<sub>6</sub>F<sub>1</sub> (212.82 cc).

### 3.9. Fruit Weight (g)

The pooled analysis of data presented in Table 9 showed that beheaded height and micronutrients had showed significant on fruit weight. The maximum fruit weight (301.91 g, 281.14 g and 291.52 g) was recorded in T<sub>1</sub> during 2020, 2021, and pooled respectively and was found statistically significant over the treatment T<sub>2</sub> (276.68 g), followed by T<sub>3</sub> (262.05 g), T<sub>4</sub> (252.43 g), and T<sub>5</sub> (243.99 g). The minimum fruit weight was recorded in T<sub>6</sub> (228.22 g). Foliar spray of micronutrients showed a highly significant effect on fruit weight during the investigation period. Foliar spray, F<sub>2</sub> [0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%)] recorded highest fruit weight during the investigation period 2020 (272.48 g), 2021 (263.07 g), and pooled (267.77 g). Interaction of beheaded height and foliar spray of micronutrients showed a significant effect on fruit weight. The maximum fruit weight was recorded in T<sub>1</sub>F<sub>2</sub> (312.83 g) which was found statistically significant over T<sub>1</sub>F<sub>1</sub> (270.21 g), T<sub>2</sub>F<sub>2</sub> (280.22 g), T<sub>2</sub>F<sub>1</sub> (273.13 g), T<sub>3</sub>F<sub>2</sub> (272.10 g), T<sub>4</sub>F<sub>2</sub> (263.70 g), T<sub>5</sub>F<sub>2</sub> (252.86 g), T<sub>3</sub>F<sub>1</sub> (252.00 g), T<sub>4</sub>F<sub>1</sub> (241.17 g), T<sub>5</sub>F<sub>1</sub> (235.13), T<sub>6</sub>F<sub>1</sub> (231.50), The minimum fruit weight was recorded in T<sub>6</sub>F<sub>2</sub> (224.93 g).

### 3.10 Pulp Weight (g)

According to the analysis of pooled data presented in Table 10 showed that beheaded height and micronutrients had showed significant on pulp weight. The maximum pulp weight was recorded in T<sub>1</sub> (233.16 g) which was statistically superior to T<sub>2</sub> (216.35 g) followed by T<sub>3</sub> (195.89 g), T<sub>4</sub> (188.90 g) and T<sub>5</sub> (178.87 g). The minimum pulp weight was recorded in T<sub>6</sub> (159.31 g). Foliar spray of micronutrients was found to be significant during the investigation period. Foliar spray, F<sub>2</sub> [0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%)] exerted highest effect on pulp weight. Interaction of beheaded height and foliar spray of micronutrients showed a highly significant effect on pulp weight. The maximum pulp weight was recorded in T<sub>1</sub>F<sub>2</sub> (253.96 g) which was found statistically superior to T<sub>2</sub>F<sub>2</sub> (221.04 g), followed by T<sub>1</sub>F<sub>1</sub> (212.37 g), T<sub>2</sub>F<sub>1</sub> (211.66 g), T<sub>3</sub>F<sub>2</sub> (203.40 g), T<sub>4</sub>F<sub>2</sub> (201.91 g), T<sub>3</sub>F<sub>1</sub> (188.37 g), T<sub>5</sub>F<sub>2</sub> (186.34 g), T<sub>4</sub>F<sub>1</sub> (175.90 g), T<sub>5</sub>F<sub>1</sub> (171.40 g), and T<sub>6</sub>F<sub>1</sub> (165.94 g). The minimum pulp weight was recorded in T<sub>6</sub>F<sub>2</sub> (152.69 g).

**Table 9. Effect of different level of beheaded heights and foliar spray of micronutrients on fruit weight**

Treatments	Fruit Weight (g)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	270.08 <sup>bc</sup>	333.73 <sup>a</sup>	301.91 <sup>a</sup>	270.34 <sup>ab</sup>	291.94 <sup>a</sup>	281.14 <sup>a</sup>	270.21 <sup>b</sup>	312.83 <sup>a</sup>	291.52 <sup>a</sup>
T2	267.17 <sup>bcd</sup>	288.07 <sup>b</sup>	277.62 <sup>b</sup>	279.09 <sup>a</sup>	272.37 <sup>ab</sup>	275.73 <sup>ab</sup>	273.13 <sup>ab</sup>	280.22 <sup>b</sup>	276.67 <sup>b</sup>
T3	250.40 <sup>cdef</sup>	265.27 <sup>bcde</sup>	257.83 <sup>c</sup>	253.61 <sup>bc</sup>	278.92 <sup>a</sup>	266.26 <sup>bc</sup>	252.00 <sup>bc</sup>	272.10 <sup>b</sup>	262.05 <sup>c</sup>
T4	242.20 <sup>cdef</sup>	255.17 <sup>cddef</sup>	248.68 <sup>cd</sup>	240.13 <sup>cd</sup>	272.22 <sup>ab</sup>	256.18 <sup>c</sup>	241.17 <sup>de</sup>	263.70 <sup>bc</sup>	252.43 <sup>cd</sup>
T5	239.33 <sup>def</sup>	258.90 <sup>bcdef</sup>	249.11 <sup>cd</sup>	230.93 <sup>cde</sup>	246.81 <sup>cd</sup>	238.87 <sup>d</sup>	235.13 <sup>e</sup>	252.86 <sup>cd</sup>	243.99 <sup>d</sup>
T6	236.33 <sup>ef</sup>	233.73 <sup>f</sup>	235.03 <sup>d</sup>	226.67 <sup>de</sup>	216.14 <sup>e</sup>	221.40 <sup>e</sup>	231.50 <sup>e</sup>	224.93 <sup>e</sup>	228.22 <sup>e</sup>
Mean	<b>250.92<sup>b</sup></b>	<b>272.48<sup>a</sup></b>	<b>261.70</b>	<b>250.13<sup>b</sup></b>	<b>263.07<sup>a</sup></b>	<b>256.60</b>	<b>250.52<sup>b</sup></b>	<b>267.77<sup>a</sup></b>	<b>259.15</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		292.45	12.42*		170.52	9.48***		88.04	6.81***
T		235.80	19.75***		120.23	14.10***		90.69	12.25***
F*T		292.45	30.42		170.52	23.23*		88.04	16.69*

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

**Table 10. Effect of different level of beheaded heights and foliar spray of micronutrients on pulp weight (g)**

Treatments	Pulp weight (g)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	208.16 <sup>bc</sup>	273.90 <sup>a</sup>	241.03 <sup>a</sup>	216.57 <sup>ab</sup>	234.02 <sup>a</sup>	225.29 <sup>a</sup>	212.37 <sup>bc</sup>	253.96 <sup>a</sup>	233.16 <sup>a</sup>
T2	202.41 <sup>bcd</sup>	229.28 <sup>b</sup>	215.85 <sup>b</sup>	220.90 <sup>ab</sup>	212.79 <sup>abc</sup>	216.84 <sup>a</sup>	211.66 <sup>bc</sup>	221.04 <sup>b</sup>	216.35 <sup>b</sup>
T3	185.73 <sup>cde</sup>	194.21 <sup>cde</sup>	189.97 <sup>c</sup>	191.01 <sup>cd</sup>	212.59 <sup>abc</sup>	201.80 <sup>b</sup>	188.37 <sup>de</sup>	203.40 <sup>c</sup>	195.89 <sup>c</sup>
T4	179.20 <sup>de</sup>	197.83 <sup>cd</sup>	188.52 <sup>c</sup>	172.60 <sup>de</sup>	205.98 <sup>bc</sup>	189.29 <sup>b</sup>	175.90 <sup>ef</sup>	201.91 <sup>cd</sup>	188.90 <sup>cd</sup>
T5	177.74 <sup>de</sup>	195.09 <sup>cde</sup>	186.42 <sup>cd</sup>	165.05 <sup>e</sup>	177.58 <sup>de</sup>	171.31 <sup>c</sup>	171.40 <sup>f</sup>	186.34 <sup>e</sup>	178.87 <sup>d</sup>
T6	167.81 <sup>e</sup>	168.00 <sup>e</sup>	167.90 <sup>d</sup>	164.07 <sup>e</sup>	137.37 <sup>f</sup>	150.72 <sup>d</sup>	165.94 <sup>fg</sup>	152.69 <sup>g</sup>	159.31 <sup>e</sup>
Mean	<b>186.84<sup>b</sup></b>	<b>209.72<sup>a</sup></b>	<b>198.28</b>	<b>188.37<sup>b</sup></b>	<b>196.72<sup>a</sup></b>	<b>192.54</b>	<b>187.60<sup>b</sup></b>	<b>203.22<sup>a</sup></b>	<b>195.41</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		264.97	11.82**		160.59	9.20		67.66	5.97***
T		211.66	18.72***		99.94	12.86***		76.67	11.26***
F*T		264.00	28.96		160.60	22.54*		67.66	14.63**

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

Table 11. Effect of different level of beheaded heights and foliar spray of micronutrients on stone weight

Treatments	Stone wt (g)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	31.00 <sup>d</sup>	33.50 <sup>bc</sup>	32.25 <sup>c</sup>	31.86 <sup>ef</sup>	33.64 <sup>cdef</sup>	32.75 <sup>c</sup>	31.43 <sup>e</sup>	33.57 <sup>cde</sup>	32.50 <sup>b</sup>
T2	32.78 <sup>cd</sup>	31.75 <sup>cd</sup>	32.27 <sup>c</sup>	31.75 <sup>ef</sup>	35.58 <sup>b</sup>	33.67 <sup>abc</sup>	32.27 <sup>e</sup>	33.67 <sup>cde</sup>	32.97 <sup>b</sup>
T3	32.00 <sup>cd</sup>	35.23 <sup>b</sup>	33.62 <sup>bc</sup>	31.17 <sup>bcd</sup>	34.60 <sup>f</sup>	32.88 <sup>bc</sup>	31.58 <sup>e</sup>	34.92 <sup>cd</sup>	33.25 <sup>b</sup>
T4	35.17 <sup>b</sup>	35.33 <sup>b</sup>	35.25 <sup>ab</sup>	35.11 <sup>bcd</sup>	34.47 <sup>bcd</sup>	34.79 <sup>abc</sup>	35.14 <sup>c</sup>	34.90 <sup>cd</sup>	35.02 <sup>ab</sup>
T5	35.50 <sup>b</sup>	38.39 <sup>a</sup>	36.95 <sup>a</sup>	35.08 <sup>bcd</sup>	37.17 <sup>b</sup>	36.13 <sup>ab</sup>	35.29 <sup>c</sup>	37.78 <sup>b</sup>	36.54 <sup>a</sup>
T6	33.33 <sup>bc</sup>	39.80 <sup>a</sup>	36.57 <sup>a</sup>	32.33 <sup>def</sup>	41.17 <sup>a</sup>	36.75 <sup>a</sup>	32.83 <sup>de</sup>	40.49 <sup>a</sup>	36.66 <sup>a</sup>
Mean	<b>33.30<sup>b</sup></b>	<b>35.67<sup>a</sup></b>	<b>34.48</b>	<b>32.88<sup>b</sup></b>	<b>36.10<sup>a</sup></b>	<b>34.49</b>	<b>33.09<sup>b</sup></b>	<b>35.89<sup>a</sup></b>	<b>34.49</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		1.50	0.89 <sup>****</sup>		2.97	1.25 <sup>***</sup>		1.63	0.93 <sup>***</sup>
T		5.17	2.92 <sup>*</sup>		6.61	3.31		4.85	2.83 <sup>*</sup>
F*T		1.50	2.17 <sup>**</sup>		2.97	3.07 <sup>**</sup>		1.63	2.27 <sup>**</sup>

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\* P &lt; 0.001

Table 12. Effect of different level of beheaded heights and foliar spray of micronutrients on peel weight

Treatments	Peel weight (g)								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	30.92 <sup>cd</sup>	26.33 <sup>e</sup>	<b>28.63</b>	21.91 <sup>d</sup>	24.28 <sup>cd</sup>	<b>23.09<sup>d</sup></b>	26.41 <sup>ef</sup>	25.31 <sup>f</sup>	<b>25.86<sup>d</sup></b>
T2	31.97 <sup>bc</sup>	27.03 <sup>e</sup>	<b>29.50</b>	26.44 <sup>c</sup>	24.00 <sup>cd</sup>	<b>25.22<sup>c</sup></b>	29.21 <sup>c</sup>	25.52 <sup>f</sup>	<b>27.36<sup>c</sup></b>
T3	32.67 <sup>abc</sup>	35.82 <sup>a</sup>	<b>34.25</b>	31.43 <sup>b</sup>	31.73 <sup>b</sup>	<b>31.58<sup>b</sup></b>	32.05 <sup>ab</sup>	33.78 <sup>a</sup>	<b>32.91<sup>b</sup></b>
T4	27.83 <sup>de</sup>	22.00 <sup>e</sup>	<b>24.92</b>	32.42 <sup>b</sup>	31.78 <sup>b</sup>	<b>32.10<sup>ab</sup></b>	30.13 <sup>bc</sup>	26.89 <sup>def</sup>	<b>28.51<sup>b</sup></b>
T5	26.08 <sup>e</sup>	25.42 <sup>e</sup>	<b>25.75</b>	30.80 <sup>b</sup>	32.07 <sup>b</sup>	<b>31.43<sup>b</sup></b>	28.44 <sup>cde</sup>	28.74 <sup>cd</sup>	<b>28.59<sup>b</sup></b>
T6	35.19 <sup>ab</sup>	25.93 <sup>e</sup>	<b>30.56</b>	30.27 <sup>b</sup>	37.60 <sup>a</sup>	<b>33.93<sup>a</sup></b>	32.73 <sup>a</sup>	31.77 <sup>ab</sup>	<b>32.25<sup>a</sup></b>
Mean	<b>30.78<sup>a</sup></b>	<b>27.09<sup>b</sup></b>	<b>28.93</b>	<b>28.88<sup>b</sup></b>	<b>30.24<sup>a</sup></b>	<b>29.56</b>	<b>29.83<sup>a</sup></b>	<b>28.67<sup>b</sup></b>	<b>29.25</b>
		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>		<b>SEm (±)</b>	<b>CD</b>
F		3.81	1.42 <sup>***</sup>		2.45	1.14 <sup>*</sup>		1.68	0.94 <sup>*</sup>
T		1.28	1.46 <sup>***</sup>		0.48	2.02 <sup>***</sup>		0.43	0.85 <sup>***</sup>
F*T		3.81	3.47 <sup>**</sup>		2.45	2.79 <sup>**</sup>		1.68	2.31 <sup>*</sup>

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\* P &lt; 0.001

**Table 13. Effect of different level of beheaded heights and foliar spray of micronutrients on pulp stone ratio**

Treatments	Pulp stone ratio								
	2020			2021			Pooled		
	F1	F2	Mean	F1	F2	Mean	F1	F2	Mean
T1	6.72 <sup>bc</sup>	8.16 <sup>a</sup>	<b>7.44<sup>a</sup></b>	6.83 <sup>ab</sup>	6.96 <sup>a</sup>	<b>6.89<sup>a</sup></b>	6.77 <sup>b</sup>	7.56 <sup>a</sup>	<b>7.17<sup>a</sup></b>
T2	6.17 <sup>cd</sup>	7.23 <sup>b</sup>	<b>6.70<sup>b</sup></b>	6.99 <sup>a</sup>	5.99 <sup>c</sup>	<b>6.49<sup>ab</sup></b>	6.58 <sup>b</sup>	6.61 <sup>b</sup>	<b>6.60<sup>b</sup></b>
T3	5.80 <sup>cde</sup>	5.55 <sup>de</sup>	<b>5.68<sup>c</sup></b>	6.13 <sup>bc</sup>	6.16 <sup>bc</sup>	<b>6.14<sup>b</sup></b>	5.97 <sup>c</sup>	5.85 <sup>c</sup>	<b>5.91<sup>c</sup></b>
T4	5.11 <sup>ef</sup>	5.60 <sup>de</sup>	<b>5.35<sup>c</sup></b>	4.91 <sup>d</sup>	5.99 <sup>c</sup>	<b>5.45<sup>c</sup></b>	5.01 <sup>d</sup>	5.79 <sup>c</sup>	<b>5.40<sup>d</sup></b>
T5	5.04 <sup>ef</sup>	5.12 <sup>ef</sup>	<b>5.08<sup>cd</sup></b>	4.71 <sup>d</sup>	4.80 <sup>de</sup>	<b>4.75<sup>d</sup></b>	4.88 <sup>d</sup>	4.96 <sup>d</sup>	<b>4.92<sup>e</sup></b>
T6	5.04 <sup>ef</sup>	4.22 <sup>f</sup>	<b>4.63<sup>d</sup></b>	5.07 <sup>d</sup>	3.35 <sup>e</sup>	<b>4.21<sup>d</sup></b>	5.06 <sup>d</sup>	3.79 <sup>e</sup>	<b>4.42<sup>f</sup></b>
Mean	<b>5.65<sup>b</sup></b>	<b>5.98<sup>a</sup></b>	<b>5.81</b>	<b>5.77<sup>a</sup></b>	<b>5.54<sup>a</sup></b>	<b>5.66</b>	<b>5.71<sup>a</sup></b>	<b>5.76<sup>a</sup></b>	<b>5.74</b>
	SEm (±)		CD	SEm (±)		CD	SEm (±)		CD
F	0.27		0.38	0.20		0.33	0.04		0.14
T	0.27		0.67 <sup>***</sup>	0.24		0.63 <sup>***</sup>	0.13		0.47 <sup>***</sup>
F*T	0.27		0.92 <sup>*</sup>	0.20		0.80 <sup>**</sup>	0.04		0.35 <sup>***</sup>

\*P &lt; 0.05; \*\*P &lt; 0.01; \*\*\*P &lt; 0.001

### 3.11 Stone wt (g)

A perusal analysis of pooled of data presented in Table 11 showed that beheaded height and micronutrients had showed significant on stone weight. The maximum stone weight (g) was found in T<sub>5</sub> (36.95 g), and T<sub>6</sub> (36.75 g and 36.66 g) during the investigation period 2020, 2021 and pooled respectively and found to be statistically parity with T<sub>5</sub> (36.54 g) followed by T<sub>4</sub> (35.02 g), T<sub>3</sub> (33.25 g), and T<sub>2</sub> (32.97 g). The minimum stone weight was found in T<sub>1</sub> (32.50 g). The foliar spray of micronutrients was found to be highly significant during the investigation period. The maximum stone weight was recorded with foliar application of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) during the investigation period 2020 (35.67 g), 2021 (36.10 g), and pooled (35.89 g) respectively. Interaction of beheaded height and foliar spray of micronutrients showed a highly significant effect on stone weight. The maximum stone weight (g) was recorded in T<sub>6</sub>F<sub>2</sub> (40.49 g) which was found statistically significant and superior to T<sub>5</sub>F<sub>2</sub> (37.78 g) followed by T<sub>5</sub>F<sub>1</sub> (35.29 g), T<sub>4</sub>F<sub>1</sub> (35.14 g), T<sub>3</sub>F<sub>2</sub> (34.92), T<sub>4</sub>F<sub>2</sub> (34.90 g), T<sub>2</sub>F<sub>2</sub> (33.67 g), T<sub>1</sub>F<sub>2</sub> (33.57 g), T<sub>6</sub>F<sub>1</sub> (32.83 g), T<sub>2</sub>F<sub>1</sub> (32.27 g), and T<sub>3</sub>F<sub>1</sub> (31.59 g). The minimum stone weight was found in T<sub>1</sub>F<sub>1</sub> (31.43 g).

### 3.12 Peel weight (g)

The pooled data presented in Table 12 showed that beheaded height had showed significant on peel weight. The maximum peel weight was found in T<sub>3</sub> (32.91 g) which shows statistical similarity with T<sub>6</sub> (32.25 g) but found significant in

T<sub>5</sub> (28.59 g), and T<sub>4</sub> (28.51 g) followed by T<sub>2</sub> (27.36 g). The minimum peel weight was found in T<sub>1</sub> (25.86 g). Foliar spray of micronutrient and interaction showed significant effect on peel weight. Foliar spray F<sub>1</sub> resulted in a higher peel weight (29.83 g) than F<sub>2</sub> (28.67 g). Interaction of different levels of beheaded height and foliar spray show a significant effect on peel weight. The maximum peel weight (g) was found in T<sub>3</sub>F<sub>2</sub> (33.78 g), followed by T<sub>6</sub>F<sub>1</sub> (32.73 g), T<sub>3</sub>F<sub>1</sub> (32.05 g), T<sub>6</sub>F<sub>2</sub> (31.77 g), T<sub>4</sub>F<sub>1</sub> (30.13 g), T<sub>2</sub>F<sub>1</sub> (29.21 g), T<sub>5</sub>F<sub>2</sub> (28.74 g), T<sub>5</sub>F<sub>1</sub> (28.44), T<sub>4</sub>F<sub>2</sub> (26.89 g), T<sub>1</sub>F<sub>1</sub> (26.41 g), T<sub>2</sub>F<sub>2</sub> (25.52 g). The minimum peel weight was found in T<sub>1</sub>F<sub>2</sub> (25.31 g).

### 3.13 Pulp Stone Ratio

A perusal analysis of pooled data presented in Table 13 reveals that beheaded height had showed significant on pulp-stone ratio. The maximum pulp-stone ratio was recorded in T<sub>1</sub> (7.17) which was found statistically significant and superior to T<sub>2</sub> (6.60) followed by T<sub>3</sub> (5.91), T<sub>4</sub> (5.40), and T<sub>5</sub> (4.92). The minimum pulp weight was recorded in T<sub>6</sub> (4.42). Foliar spray of micronutrients was found to be non-significant during the investigation period while the interaction of beheaded height and foliar spray of micronutrients showed a significant effect on the pulp-stone ratio. The highest pulp-stone ratio (7.56) was recorded in T<sub>1</sub>F<sub>2</sub> which was found significant and superior to T<sub>1</sub>F<sub>1</sub> (6.77) followed by T<sub>2</sub>F<sub>2</sub> (6.61), T<sub>2</sub>F<sub>1</sub> (6.58), T<sub>3</sub>F<sub>1</sub> (5.97), T<sub>3</sub>F<sub>2</sub> (5.85), T<sub>4</sub>F<sub>2</sub> (5.80), T<sub>6</sub>F<sub>1</sub> (5.057), T<sub>4</sub>F<sub>1</sub> (5.01), T<sub>5</sub>F<sub>2</sub> (4.96), and T<sub>5</sub>F<sub>1</sub> (4.88), The minimum pulp-stone ratio was recorded in T<sub>6</sub>F<sub>2</sub> (3.79).

## 4. DISCUSSION

### 4.1 Effect of Different Levels of Beheaded Height on Flowering and Fruiting Attributes of Mango cv. Amrapali

Different levels of beheaded height had shown significant effects on days to flowering, 50% flowering, days to fruit set, number of panicles per plant, panicles length, fruit weight, fruit size, fruit volume, and pulp-stone ratio. Among the treatments, plant beheaded at 80 cm height from ground level showed early days to flowering (23.42), days to 50 % flowering (31.07), days to fruit set (37.05), the highest number of panicles per plant (71.58), largest panicles length (30.52 cm), fruit length (13.11 cm), fruit width (9.68 cm), maximum fruit weight (291.52 g), fruit volume (274.86 cc), pulp weight (233.16 g), pulp stone ratio (7.17) and minimum peel weight (25.86 g). This might be due to lower canopy volume which received maximum light penetrance within the canopy [28] leading to higher mobilization of nutrients within the canopy [5, 6] which resulted in to increase in fruit weight and fruit size. Earlier flowering in plants beheaded at 80 cm height is also due to the boron and zinc effect [29]. An increase in fruit weight, fruit size, fruit volume, pulp weight, and pulp stone ratio may also be due to more absorption of water, and nutrients which increase the volume of intercellular spaces in the pulp [30]. Such type of results is also reported by [16,31,32].

### 4.2 Effect of Foliar Spray of Micronutrients on Flowering and Fruiting Attributes of Mango cv. Amrapali

Foliar spray of micronutrients had shown a significant effect on flowering and fruiting attributes of mango except pulp stone ratio. Foliar application of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%) [2 sprays at just before flowering and marble stage] showed highest effect on days to flowering (26.04 days), days to fruit set (38.74), number of panicles per plant (59.39), length of panicles (27.56 cm), fruit length (12.15 cm), fruit width (9.23 cm), fruit volume (264.31 cc), fruit weight (267.77 g), peel weight (28.67 g) and, stone weight (35.89 g). An increase in fruit size, fruit volume and fruit weight might be due to the combined effect of Zinc and boron because zinc had vital role in the starch formation, and boron is actively involved in the transportation of

carbohydrates in plants [30] which lead to increase the fruit size and volume. Foliar spray of 0.2 % zinc at the flowering and pea stage of mango recorded highest fruit length and width by [33]. These results are also in conformity with the earlier findings by [24,35-38].

### 4.3 Interaction of Different Levels of Beheaded Height and micronutrients (Zn, Cu, and Boron) on flowering and Fruiting Attributes of Mango cv. Amrapali

Interaction of different levels of beheaded height and foliar spray of micronutrients exerted a significant effect on flowering and fruiting attributes. Early days to flowering (21.67), 50 % flowering (30.67 days), days to fruit set, (36.43 days) maximum number of panicles per plant (77.50), panicles length (30.53 cm), fruit length (13.50 cm), fruit width (9.92 cm), fruit weight (312.83 g), fruit volume (300.89 cc), pulp weight (253.96 g) and pulp stone ratio (7.56) was recorded in highest in T<sub>1</sub> F<sub>2</sub> (Plant beheaded at 80 cm height with foliar spray of 0.4% Zinc sulphate + Copper sulphate (0.2%) + Borax (0.2%). This might be due to the interaction effect of beheaded height and foliar spray of micronutrients which lead to increase in the fruit size, fruit weight and, fruit volume with early flowering and fruiting. This finding is supported by [27,39,40-44]. The highest peel weight was found in T<sub>3</sub> F<sub>2</sub> (33.78 g) which might be due to the effect of zinc, because zinc helps in the synthesis of tryptophan, a precursor for the synthesis of indoleacetic acid responsible higher thickness of peel [45].

## 5. CONCLUSIONS

Based on the results obtained from the present investigations it was found that plant beheaded at 80 cm height from ground level and foliar spray of micronutrients (0.4% Zinc Sulphate + Copper Sulphate (0.2%) + Borax (0.2%) [2 sprays at just before flowering and marble stage] had significant effect on flowering and fruiting attributes individually or in combination. Hence, it was concluded that a plant beheaded at 80 cm height with foliar spray of 0.4% Zinc Sulphate + Copper Sulphate (0.2%) + Borax (0.2%) [2 sprays just before flowering and marble stage] can produce higher fruit yield in terms of maximum fruit weight, fruit size, fruit volume with early flowering and fruiting.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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